DOCUMENT RESUME

ED 411 782 IR 056 129

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TITLE Using the Internet To Improve the Resources of a Rural High School Media Center.
PUB DATE 1996-00-00
NOTE 92p.; Ed.D. Practicum, Nova University.
PUB TYPE Dissertations/Theses - Practicum Papers (043) -- Reports - Descriptive (141) -- Tests/Questionnaires (160)
EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS Access to Information; *Educational Resources; *High Schools; Individual Instruction; *Internet; Learning Resources Centers; *Library Collection Development; *Rural Education; *Rural Schools; School Libraries; Student Attitudes; Teacher Attitudes; Training
IDENTIFIERS *Access to Technology; Connectivity; Technology Integration

ABSTRACT

This project was designed to bring the resources of the Internet to a rural high school through the school's media center and to provide training to enough of the faculty and students to facilitate its use. A flexible program for five academic departments requiring only one meeting of each department and utilizing written worksheets geared to four areas of the Internet, Gopher, Telnet, FTP, and the World Wide Web, was designed. Using the SouthEastern Resources Vision for Education as an Internet provider, 18 teachers, an aide and selected students were guided through a 25-week program of Internet basics through self- and individual-guided instruction. A report to the whole faculty and a web page for the school rounded out the project. As a result of the project, resources of the media center were significantly increased and students and teachers were instructed on Internet use. With 58 students responding to a posttest survey on online research, only 24 reported research success more than half the time. Twenty-one of 30 teachers reported success more than half the time. Another result of the project was the addition to the media center of three multimedia encyclopedias and the accessibility of Britannica Online to users. An 18-page report describing the instructional program and giving an extensive list of useful Internet sites was distributed to the entire faculty. In addition, a web homepage was launched, serving as a menu to connect all the most useful areas of the Internet. The survey, Internet search checklist, sample activity sheets, and report to faculty are appended. (Contains 50 references.) (AEF)

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ED 411 782

Using the Internet to Improve the Resources of a Rural High School Media Center

by

Jean A. Curran

National Cluster 62

A Practicum II Report Presented to the
Ed.D. Program in Child and Youth Studies
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

NOVA SOUTHEASTERN UNIVERSITY

1996

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PRACTICUM APPROVAL SHEET

This practicum took place as described.

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This practicum report was submitted by Jean A. Curran under the direction of the adviser listed below. It was submitted to the Ed. D. Program in Child and Youth Studies and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Nova Southeastern University.

Approved:

Sept. 18, 1996
Date of Final Approval of Report

Wm. W. Anderson
William Anderson, Ph.D., Adviser

ACKNOWLEDGEMENT

It is with heartfelt gratitude that the author acknowledges the constant and generous support of her husband throughout the rigors of this project. A large debt of gratitude is owed to Dr. William Anderson whose kindness, understanding, and expertise guided this effort. And grateful appreciation is extended to Principal Steve Sewell whose ready consent enabled the use of school facilities and the contribution of willing faculty members and students.

TABLE OF CONTENTS

Page

ACKNOWLEDGEMENT iii

TABLE OF CONTENTS iv

LIST OF TABLES v

Chapter

I INTRODUCTION 1

Description of Community. 1
Writer's Work Setting and Role 2

II STUDY OF THE PROBLEM 7

Problem Description 7
Problem Documentation 8
Causative Analysis. 13
Relationship of the Problem to the Literature . 15

III ANTICIPATED OUTCOMES AND EVALUATION INSTRUMENTS 20

Goals and Expectations. 20
Expected Outcomes 20
Measurement of Outcomes 21

IV SOLUTION STRATEGY. 23

Discussion and Evaluation of Possible Solutions 23
Description of Selected Solution. 32
Report of Action Taken. 33

V RESULTS, DISCUSSION AND RECOMMENDATIONS. 45

Results 45
Discussion. 49
Recommendations 54
Dissemination 55

REFERENCES. 56

Appendices Page

A HOW DO YOU FEEL ABOUT RESEARCH ONLINE? A SURVEY. . 63

B INTERNET SEARCH CHECKLIST 65

C SAMPLE ACTIVITY SHEETS. 67

D REPORT TO FACULTY 74

E SCHOOL WEB HOMEPAGE 83

LIST OF TABLES

Table

1 Student Use of Media Center Research: A Survey. . . 9

2 Teachers' Use of Media Center for Supplementary Materials. 11

3 Age Analysis of General References as Reflected by Media Center Records 12

4 Comparison of Successful Use of Media Center During Two School Years 47

5 Enthusiasm Scale for Electronic Research Among High School Teachers. 49

ABSTRACT

Using the Internet to Improve the Resources of a Rural High School Media Center. Curran, Jean A., 1996: Practicum Report, Nova Southeastern University, Ed. D. Program in Child and Youth Studies. Educational Technology/Staff Development/Rural Education.

This project was designed to bring the resources of the Internet to a rural high school and to provide training to enough of the faculty and students to facilitate its use. A flexible program for five academic departments requiring only one meeting of each department and utilizing written worksheets geared to four areas of the Internet, Gopher, Telnet, FTP, and the World Wide Web, was designed.

Using the SouthEastern Resources Vision for Education as an Internet provider, the writer guided 18 teachers, an aide, and selected students through a 25-week program of Internet basics through self- and individual-guided instruction. A report to the whole faculty and a web page for the school rounded out the project.

Though statistical projections were not entirely met due to the limitations of the connection, both students and teachers showed enthusiasm for Internet resources. A direct Internet connection was subsequently purchased by the school as a result of the project.

* * * * *

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CHAPTER 1

INTRODUCTION

Description of Community

The site of this project was one of the smallest counties in a southern state located about 60 miles north of the state capital at the entrance to the Appalachian Mountains. The lives of the county's 16,000 plus citizens were affected in a number of ways by the rural, mountainous environment in which they lived. The scenic mountains were a source of pride, and they bound their inhabitants together into a common life-style marked by a leisurely pace and a neighborly concern for each other, but they also helped to isolate them from more progressive areas.

The usual economic problems of Southern rural communities were in evidence. Agricultural interests had become concentrated into poultry production with a smattering of cattle or horse farms scattered about the county. A few small factories had located in the area, and some of these had moved out again. The county seat was small and scenic, but was made up of small businesses which offered few employment opportunities for young people. Many working-age

citizens were forced to commute 45 miles away to a Lockheed plant (Curran, 1995).

The mountains had drawn retirees from all over the Eastern United States, and they had settled into two upscale communities which gave distinctness to an otherwise typical Southern rural landscape. The presence of these communities increased the tax base somewhat without adding much to the employment picture. However, they did provide resource people for the schools of the county and contributed to the general cultural life of the region. Retired business people, writers, artists, and various crafts people were numbered among these adopted citizens.

The rapid growth that was swelling many areas of the state was just beginning to reach this mountain county. A shopping mall was in the planning stages; three banks and a savings and loan association had located within its boundaries; a new public library was under construction; and Friday afternoon traffic jams were a common occurrence on local streets.

The Writer's Work Setting and Role

There was one county school system composed of two elementary schools, one middle school, and one high school for the approximately 3000 school-age children and young people of the

county. The high school population of approximately 800 students was 98.2 percent white, 1.5 percent African-American, .15 percent Hispanic, and .15 percent Asian (Curran, 1995). The school was old and crowded, but the year before this project was initiated, a bond referendum for the purpose of building a new high school passed on the second attempt. This was good news for the suffering students and teachers, but the over-crowded situation existing at the time would have to be endured for two more years until the new school could be completed.

The school employed 58 teachers led by a principal, a vice-principal for student affairs, and a vice-principal for instruction. The vice-principal for instruction was a new position, and this was the first experience this school had had with an administrator totally dedicated to the instructional program. It promised to initiate proactive leadership as well as correct some of the problems that had nagged the school in the past. Approximately 64 percent of the faculty either had or were working toward advanced degrees.

The entire school system was involved at the time in a technology frenzy that was the result of a state lottery dedicated to education that had begun two years before. During the school year just past, the high school had added 22 computers to only five that could formerly be claimed by the academic areas. The media center

had become automated and networked, and networking cables to the majority of the classrooms were being installed. The first distance learning course by satellite was offered the previous year. That year had also seen the installation of a two-way interactive video system which became operational in mid-year and was in general use for the remainder of the school year. Twenty-two more computers had been ordered for the following school year which would put a computer on almost every teacher's desk.

The writer was the high school media specialist whose function it was to acquire, process, and arrange print and non-print materials and equipment that supplemented classroom instruction; organize access to these materials and equipment; and supervise their use by both faculty and students. Besides these duties much of the responsibility for technology planning, acquisition, training, and use had been added to the job description. The media specialist had also been given the responsibility for coordinating both satellite and two-way interactive video distance learning programs. Finally, the supervision of a television production studio and partial responsibility for the closed-circuit, student-generated daily news program fell to the writer. The role of media specialist was in a state of transition, and new definitions were being formulated as the

Information Age brought new and more sophisticated demands for information and its rapid access.

Eight years before, a need for some kind of preparation for the local college entrance examination of choice, the Scholastic Aptitude Test, was acknowledged. The limited curriculum, however, could not support the added instruction, and the writer developed a short workshop after school. This had developed into a seven-day workshop conducted within the sophomore English classes that were populated with college-bound students.

The writer was also the high school coordinator for the Partnership for Educational Excellence, a system-wide program to promote post secondary education for high school graduates. This program led to the system's being chosen to participate in a three-year school reform study conducted by a research team from the University of California at Santa Barbara.

This distinctive rural community located in the mountains where the climate was comfortably moderate had a great deal to commend it. Privations were easily overlooked, close community spirit kept social problems to a minimum, and the community was unusually supportive of the schools. Likewise, the school lacked some desirable features, but the local life-style had attracted able educators who took pride in their work and could boast of higher

SAT scores than the state average, decreased drop-outs, and an increase in college attendance. In this atmosphere of educational progress and reform, the writer was in a position to impact the school technology program and thereby influence the building of a more effective learning environment, but there were a number of problems to be solved if this transformation was to take place.

CHAPTER II

STUDY OF THE PROBLEM

Problem Description

Despite the efforts of the writer to build a strong and viable school library, it had been impossible to keep pace with the general growth of the school and each school year's higher expectations.

In previous years a large portion of the meager library budget was directed toward building science department resources in order to furnish up-to-date materials to students conducting science projects. Individual volumes, reference sets, and audio visuals were purchased to fill the needs of science students, but still there was no keeping up with the demand.

In the area of the humanities author information had always been critical for English term papers and reports. Several of the Gale publications such as Contemporary Authors (1962-Present) and Contemporary Literary Criticism (1976-Present) were begun, but costs became so prohibitive that all had been discontinued.

The social science department was where the greatest print needs were felt. Basic reference sets were updated, but books on

governmental agencies; nations of the world, especially emerging nations; and books relating to the law were either sparse or outdated.

It had never been possible to follow the recommended library standard of updating encyclopedias every five years.

Unable to purchase all the needed books for these areas, the writer attempted to fill the needs through the purchase of periodicals. At one time periodicals made up almost one-third of the media center budget. However, they, too, became so expensive that the school was not able to purchase all that were needed.

Videos helped to fill out the needed resources, but again the limited budget held purchases to a minimum.

In summary, the high school media center did not have the resources with which to fill the needs of the students and teachers and keep up with the general progress being seen in other areas of school life. Teachers and students were forced to go outside the school for the resources they needed.

Problem Documentation

The writer conducted a survey to ascertain the depth of the problem. The results clearly showed that the students and teachers of the school were not well served with library resources.

The senior English classes containing the college-track students were given a questionnaire (see Table 1) concerning library use for reference work. Of the 60 students who responded, 38 reported that they were successful in finding their needed materials no more than half the time. Fifty-eight students, or all who actually used the media center (two revealed that they had not attempted to use the center), reported some lack of success in locating needed information, and 45 students reported finding information at the public library that they were unable to find at the school media center. Since small public libraries generally apply their funds to leisure reading rather than reference material, this fact seemed particularly damning. Eleven students went to college libraries for their information while eight simply did without.

Table 1

Student Use of Media Center for Research: A Survey

In each of the following questions, please circle the choice that most accurately reflects your experiences.

1. During your last school year (94-95), approximately how many times did you use the media center for research for an assignment or project?

never	2
1-10	44
10-20	13
20-30	0
over 30	1

2. Approximately how many times were you successful in finding the material you needed?

never	2
seldom	11
half the time	25
usually	20
always	0

3. If you were ever unsuccessful at finding the material you needed, was your lack of success because

a. you were unaware of what information the media center contained? __4__
b. you did not know how to find the information? __5__
c. the media center did not have the information you needed? __47__

4. If you were unsuccessful in finding needed material in your school media center, did you most often

a. find the information you needed in a college library? __11__
b. find the information you needed in a public library? __45__
c. find the information you needed through a local agency (chamber of commerce, county extension service, courthouse, etc.)? __1__
d. not find it at all? __8__

Twenty-nine teachers (see Table 2) responded to a similar survey, and only 17 found needed materials more than half the time. Eighteen teachers found it necessary to supplement media center materials with their own personal materials, and they, too, found college libraries a solution to the school's lack of materials.

Table 2

Teachers' Use of Media Center for Supplementary Materials: A Survey

---

In each of the following questions, please circle the choice that most accurately reflects your experiences.

1. Approximately how many times during the last school year (94-95) did you search the school media center for materials to supplement your classroom instruction?

never	4
seldom	7
occasionally	14
often	4

2. If you never searched the school media center for materials, was it because

   a. you believed you would not find what you needed? __0__
   b. you never needed supplementary materials? __4__
   c. other? __0__

3. If you did search the media center approximately how often did you find the materials needed

   a. 25% of the time? __2__
   b. 50% of the time? __10__
   c. 75% of the time? __15__
   d. 100% of the time? __2__

4. If you ever searched for supplementary materials in your school media center and were unsuccessful, did you most often

   a. try another library? __5__
   b. use personal materials? __18__
   c. do without? __10__
   d. other? __2__

The writer compared copyright dates of the ten general encyclopedias held by the media center (see Table 3), and found that only two sets were issued in the last five years; the Webster's Third International Dictionary, the library's only unabridged dictionary, was published in 1971.

Table 3

Age Analysis of General References
as Reflected by Media Center Records

Webster's Third International Dictionary. 1971
Academic American Encyclopedia. 1985
Academic American Encyclopedia. 1991
Britannica Junior Encyclopedia. 1979
Collier's Encyclopedia. 1977
Encyclopedia Americana. 1980
Encyclopedia Americana. 1990
Encyclopaedia Britannica. 1971
Lexicon Universal Encyclopedia. 1987
New Encyclopaedia Britannica Macropaedia. 1977
New Encyclopaedia Britannica Micropaedia. 1977

All available evidence pointed to a media center that was not filling the needs of its clients.

Causative Analysis

The budget constraints of a rural school system were well documented. Historically, there had been no local monies expended on media materials and supplies; the school had been totally dependent on the state to provide for these vital elements of education. The media center was an area of school where funds could easily be diverted to other uses if the leadership saw fit to do so. Though some schools in the system had made the media budget a matter of negotiation, the school in which this practicum was being conducted had, until just prior to this study, allowed the media center only the minimum funds necessary to fulfill state requirements. The amount had doubled by this time, but basic technology had claimed the increase.

Small rural schools seldom had the security equipment in place that would protect the media collection. This school media center had no security; in fact, any attempt at installing security equipment in a building that opened in 1956 would be cost prohibitive, if not impossible, since students could enter and exit the media center through five separate doors. And for a number of years summer school had been conducted in the high school, and students had been allowed to use the media center unsupervised. Tight budgets did not

allow for the provision of supervisors. Losses due to theft and carelessness had taken a considerable toll on the library collection.

Technology was a common and obvious solution to current problems involving information, and educators were beginning to make use of this resource. However, with such a limited budget, there was almost no technology in the local system (Curran, 1995, see Table 3) until the state, spurred by proceeds from the newly-initiated state lottery, began designating funds for computers and media center automation. The result was a great deal of unfamiliar technology within a short space of time. Initial technology was confined to basic cabling and hardware rather than meaningful software that could make a difference in library offerings. Adequate and effective software was still in the school's plans for the future.

Along with the introduction of basic technology came the need for training the faculty and students to use it effectively. Teacher training centers had been established around the state, but there were difficulties involved in taking advantage of these centers. Release time for teachers to be trained was at a minimum. Substitute teachers were hard to find and were seldom as effective as teachers wished. Teachers were reluctant to spend their personal time traveling long distances for training. A training program

designed to help teachers train each other was begun the previous year by the writer (Curran, 1995) and seemed to be working, but it was an inherently slow method of spreading teacher expertise with technology. To date there had been little or no effect on research capabilities in the media center.

Inadequate budgets and lack of up-to-date equipment and materials were problems that were common in the small, rural school under discussion. So was the resigned acceptance of less than desirable teacher preparation. These conditions had existed to some degree since the school's inception and had been taken as a matter of course. But with the focus on educational reform across the nation and the demands of the public that education do a better job of preparing youth for the twenty-first century, the situation was becoming more critical. Solutions were needed that would provide the students with a more acceptable learning environment.

Relationship of Problem to the Literature

To fully understand why an American school system in the 1990s was not able to provide the basic resources needed by its students and teachers, it was necessary to delve into the study of rural education in America. DeYoung (1991) made a shocking comparison between the poorest rural school systems in America and

those in the Third World and other under-developed regions around the globe. He listed among the factors contributing to impoverished school systems rural tradition, inadequate tax bases, unstable school leadership, and local political leaders who used public funds to pursue private agendas.

While finding many positive aspects in rural school systems, Smith and Lotven (1992) also pointed to an instability of leadership. Teachers teaching out-of-field, lower budgets for teacher supplies and effective in-service, lower salaries for teachers, and a lack of value placed on formal schooling by students and their parents were listed as hindrances to quality education.

Referring to the small amount of attention given to rural schools in comparison to that given to inner-city schools, Lewis (1992) described them as "an invisible minority" and found that "state funding formulas and requirements often put a burden on rural schools" (p. 660).

Haas (1991) stated that "rural residents do not get their share of federal and state resources" (p.10). In a lengthy study of rural education in America she focused on the economic disparities between rural and urban America and the influences these differences have had on education. She found that "in 1986 the median income for urban families was $31,639 compared to only

$23,229 for rural families, and rural jobs often provide fewer fringe benefits" leaving "one out of every four children ... living in poverty." (p.15). These facts spoke eloquently for themselves.

The foregoing studies emphasized that rural education in this country had not kept pace with urban systems that were themselves under attack for lack of effectiveness. If one added to this dismal picture insufficient interest in school libraries at the local level, it was, perhaps, understandable that a high school library in a rural school would be seriously limited despite efforts exerted on its behalf.

In The Educated Person, Hefzallah (1990) described the increasing amounts of information with which mankind had been forced to deal which had made technology both the solution to the storage and retrieval dilemma and the promulgator of even greater amounts of information. He added that "an educated person should be able to access the vast information in both print and electronic formats" (p. 21). He strongly advocated that students be taught to work with technologically-based information retrieval tools so that they could make proper use of the mountains of information available to everyone in the Information Age.

A call for better instruction in the use of technology in schools was sounded by Mecklenburger (1990) who pointed out that schools'

use of technology did not compare favorably with societal use. His conclusion "that only a handful of educators give a damn about technology" (p. 104) was a serious indictment of education's foot-dragging with respect to acquisition and integration of technological tools into the school structure. In the vast majority of schools in the nation, students had not yet acquired the technological skills that would make a difference in their educational achievements.

Training teachers to make effective use of technology was seen as a critical need before technology could begin to solve educational problems (Albright & Graf, 1992; Bulkeley,1988; Hancock & Betts, 1994; Marshall, 1990). Grubb and Gonzales (1990), Kinnaman (1990), and McCarthy (1988) strongly recommended the "teachers training teachers" approach. This solution had already been applied at the writer's school, and it proved successful just as promised by the aforementioned authors. However, as has been observed, it was a slow process, and meanwhile, media service languished. Two-way interactive video had been found to be an effective staff development medium (Hakes, Sachs, Box, & Cochenour, 1993), and there was promise that future training would be handled by this method, but the state's interest in two-way interactive video was too new to make it an immediate factor in local teacher training.

Education literature had taken cognizance of the shortcomings in education in the 1980s and 1990s, and numerous studies had proposed possible solutions to what ailed education. It was common for those solutions to involve technology so that the use of technology in education had come under increasing scrutiny. It was a time for taking stock, but it was also a time for experimentation.

Chapter III

ANTICIPATED OUTCOMES AND EVALUATION INSTRUMENTS

Goals and Expectations

The following goals and outcomes were projected for this practicum.

It was the goal of the project to significantly increase the reference resources of the media center with which the writer was charged so that the center and its staff could fill every need that emerged. A further goal was to instruct the faculty and selected students in the use of whatever new resources could be provided so that they could develop new confidence in media center materials.

Expected Outcomes

Objective 1: It was expected that when the 60 previously-surveyed, college-bound senior students were surveyed at the end of the school year, there would be an increase from 19 to 29 who would report that they had been successful in finding needed materials more than half the time.

Objective 2: It was expected that, whereas 17 teachers reported in the first survey that they were able to find needed

materials more than half the time, that number would increase to 25 in the posttest survey.

Objective 3: It was expected that library records would reflect that at least three recent encyclopedias would be available to media center users.

Objective 4: An attitudinal test administered at the close of the school year would reveal that both students and teachers would be enthusiastic about electronic research.

Objective 5: The entire faculty would be made aware of the progress made by teachers and students by means of a specifically designed report to be distributed to the faculty at the project's conclusion.

Objective 6: A design for future research models would emerge from this practicum. An evaluation of collected data from survey questionnaires, checklists, and the program log would reveal successful search patterns that could be made a permanent element of high school research.

Measurement of Outcomes

Student and teacher surveys developed at the beginning of the school year in order to measure the extent of the problem of inadequate resources during the previous school year (see Tables 1

and 2) would be administered to the same students and teachers at the end of the school year acting as pretests and posttests. A comparison of the success rates as reported by these pretests and posttests would measure the gains in successful research that were made during the school year in which the project was implemented.

A successful media center depends on the beliefs its clients hold about the center and the confidence they place in its resources. An attitudinal survey to gauge the amount of enthusiasm that online research had prompted in media center users (see Appendix A) would be administered to participants at the end of the school year.

A search checklist (see Appendix B) would be developed for teachers and students which would accurately log each step of their personal research experiences, list successful finds, and help both students and teachers to begin to mentally map their way through the vast resources offered by technology. Researchers would not only be able to gauge their success, but would build search schemes for future projects.

Chapter IV

SOLUTION STRATEGY

Discussion and Evaluation of Possible Solutions

The problem explored in this project was the inadequacy of research materials in a rural high school media center. However, educational literature reported that the budgetary restrictions precluding the necessary updating of reference materials was not found in rural areas alone. Many school libraries across the nation were in the same predicament (Parham, 1994).

In the early 1990s whenever there was a problem in education, the first place educators looked for a solution was toward technology (Ely, 1990). The proliferation of computers and computer-related technologies which were able to perform countless services for people in multiple areas of life were finding their way into the field of education, and though some classroom traditionalists still clung to the blackboard and chalk, many more had fervently embraced the thinking machines and were exploring new ways of delivering knowledge. It was only reasonable to look closely at technology.

In a scholarly study of the importance of all media to the learning process, Kozma (1991) considered books, television, computers, and multimedia as they related to learning. He compared each to the others as to their characteristics and capabilities for influencing learning, the kind of detailed description that could be important to both teachers and media specialists concerned with fitting technology into an educational environment. Kozma provided significant implications for the use of technology to solve the problems of the writer's school.

The school already had an automated and networked media center. The network operating system prescribed by the state was Novell Netware. Two of the four computer lookup stations had built-in CD Roms, and all four had the basic utility functions (Microsoft Works) recommended by Parham (1994). Electronic encyclopedias kept encyclopedic references updated at far less cost than the print versions. The school also had the basic components of a multimedia workstation utilizing a Macintosh system, again recommended by Parham, which provided additional flexibility in the use of multimedia reference programs.

The purchase of electronic, even multimedia, encyclopedias could help to solve the problem of outdated reference works, but much more was needed to give both teachers and students the rich

veins of information that were necessary to keep abreast of an information-hungry global society.

The Internet, the world's foremost information network, seemed to be a reasonable solution to resource problems. Newsstands offered dozens of computer technology magazines replete with instructions on how to reach the Internet, but there was the matter of cost. Many K-12 schools were finding commercial Internet providers too expensive. Colleges and universities generally limited their accounts to their own students and staff. Some states provided free access, but this required proximity to urban areas. Rural areas were generally forced to pay long distance charges if they reached the Internet. This was a serious handicap to schools already strapped for cash.

Abernathy (1995) provided detailed instructions that took the neophyte Internet user from the gateway of access through the maze of menus, services, and tools, and into the mainstreams as well as the by-ways of the information giant. E-mail offered exciting communication possibilities for projects and enriching interaction. Listservs and FTP sites were loaded with information and ideas to enhance any teacher's classroom instruction. Despite the cost of the service, the value received could be astonishing if students and teachers could properly tap into the vast resources. Peck and

Dorricott (1994) called Internet research an efficient research methodology, and Hancock and Betts (1994) stated that "locating, reaching, and collecting the most current, accurate materials available is possible only through telecommunications networks" (p. 26).

One of the beacons in a sea of information was the World Wide Web, a browser or menu-like tool that made liberal use of embedded links to additional information. Embedded links were the central feature of hypertext, computer text allowing non-linear searches of documents or databases. It was made possible by a special language called Hyper Text Markup Language (HTML). An excellent overview of the World Wide Web and its HTML feature was provided by Ellsworth (1994).

A brief history of the Internet was found in the introduction to A Virtual Community (Rheingold, 1993). The haphazard development of the Internet helped to explain the lack of organization which could be bothersome to many new users. Rheingold commented on the incongruity of the importance that a totally unplanned phenomenon has assumed in the lives of everyone. His instructions on how to reach the White House and what to do when one does could be instructive to many educators and students.

An English teacher at a high school in Eagan, Minnesota referred to a student's use of the Internet as "interacting with the real world" (Wilson & Utecht, 1995, p. 77). Wilson and Utecht described many uses of the Internet by students in English, history, vocational, foreign language, business law, and science classes. Eagan High is the site for Netscape Communications' K-12 World Home Page, a valuable Web site to schools implementing Internet technology. Riel (1992) warned of some of the problems that could be encountered by classes involved in educational telecommunications projects, problems such as the need for too much teacher planning time, and offered advice on how to implement wide-area network classroom projects without spending large amounts of valuable time.

Gallo and Horton (1994), in a case study of Internet use in a Florida high school, provided would-be cyberspace travelers in the educational realm with a valuable road map. The issues of time, intelligibility, and technical inadequacies are common themes among educators first encountering technology, and prior knowledge could help teachers deal with these possible handicaps before they became debilitating problems. The authors listed a number of successful uses of telecommunications and favorite software programs that could help teachers to avoid the pitfalls of new technology. They found that one factor that spurred teachers to continue their use of

the Internet was the opportunity it afforded them to overcome the isolation from other teachers that was a common complaint of educators.

The Internet was shaping up as a nebulous medium, different from the kinds of information services on which teachers and media specialists had learned to rely. Not only the size of the resource, but its very nature, could easily disorient and confuse educational users who were accustomed to media that could be held in one's hand, manipulated, and controlled. The library without walls demanded different approaches. Page and Kesselman (1994) suggested that Internet trainers "demystify" (p. 163) the Internet by tying resources on individual subjects to print sources within the media center. Makulowich (1994) suggested providing hands-on experiences early in the opening session of the training program in order to create and maintain a high level of interest. He also found follow-up to be crucial to technology training.

"Six functions that most academics will want to use are E-mail, FTP, Finger, Telnet, Archie, and Gopher" (Monahan & Dharm, 1995). E-mail permitted teachers and students to communicate with other educators and institutions around the world. FTP was the method by which valuable materials could be downloaded to local computers. Finger was for locating people with various areas of expertise who

might add to a study. And Telnet, Archie, and Gopher, as well as Veronica, were tools for maneuvering on the Internet.

A call for prior planning and a comprehensive instructional program on what to do with the abundance of information after it has been retrieved was sounded by Kawamoto (1994) and Oberman (1995). If a school moves from a severe lack of information to almost unlimited information within the space of a few minutes, something like culture shock could result. Any effort to instruct high school students in the use of the Internet for research, then, must include instruction on selecting the best information, observing legal requirements, and properly citing information from the Internet.

The literature contained lengthy discussions on the legal and ethical uses of online data. The education venue was a perfect place to begin to come to grips with these issues and begin to prescribe guidelines which encouraged the proper use of this valuable but unwieldy resource. Sivin and Bialo (1992) suggested that the kind of direction that schools could provide in this area was already overdue and outlined a number of steps schools could take to deal with the ethical issues.

A number of training methods were uncovered. The aforementioned local training centers taught courses in Internet uses in education, but the possibility of getting large numbers of faculty

members to training centers did not look hopeful. There were video courses such as This is Internet: Road map for the Information Highway (1995) distributed by American Library Association Video/Library Video Network. The technically inexperienced would be hard pushed to master such courses without some outside encouragement and help. Do-it-yourself manuals such as Education on the Internet (Ellsworth, 1994) could furnish effective training to teachers who had some degree of familiarity with computers.

White (1995) described a project which introduced teachers to telecommunications in a "self-directed" (p. 24) mode. Teachers were provided with an introduction to various types of telecommunications, and then each was given a short and simple set of written directions to follow on his or her own time in previously designated "planning centers" (p. 25). The educators were thus able to complete most of the work in a familiar environment and at a time best suited to their temperaments and schedules.

There were even Internet training courses located on the Internet itself such as Patrick Crispen's Roadmap for the Information Superhighway (1994). Crispen's course was basic, but it still required a working knowledge of the Internet before it could be utilized.

In a media center that lacked resource materials the Internet appeared to be the most workable solution. Training teachers to use technology, more specifically the Internet, held promise for the school under consideration. The SouthEastern Regional Vision for Education (SERVE) offered access in the form of a simple shell account to educational institutions in the Southeast for $25.00 per year. That was certainly within reach of the most modest budget.

Teachers training teachers was a training method that had found favor with many schools and had worked within the writer's school. It was especially useful in rural schools which tended to be isolated and far from training centers, and which had little money to spare for training. In what was called the "first national survey of technology staff development in schools" (Siegel, 1995, p. 43), the author found that if no technology coordinator was on the scene, a teacher was the next most common trainer. She also highly recommended training teachers in small groups.

White's (1995) scheme for delivering the majority of the instruction by written guidelines fit both the limited equipment and limited time of the teachers within the school. The Internet could be supplemented by multimedia encyclopedias which could be used on most of the computers in the school.

Description and Justification for Solution Selected

The solution that seemed to best fit the writer's high school was a combination of some of the ideas already discussed. Since the school had a local area network (LAN) in place, the stage seemed to be set for the introduction of the Internet. The school network could run electronic encyclopedias, and two of the four workstations in the library had built-in CD-ROMs. Therefore, in addition to the somewhat dated electronic (text only) encyclopedias, multimedia encyclopedias, with a full array of colorful graphics, would furnish media users with the latest in multimedia research.

Recently issued reference works such as Britannica Online (1995) and the resources of the Online Book Initiative and Project Gutenberg (Ellsworth, 1994) were also available on the Internet and added to encyclopedic material available to students and teachers.

The Internet could provide the bulk of the resources so badly needed for this school population, but the Internet was a complex environment that required training and concentrated effort to make it a viable resource for library users. A carefully constructed training program directed at all the teachers in the school who desired it and then through these teachers to selected classes of students would lay a firm foundation for the use of the Internet for research at the high school.

Because of the complexities involved and because frustration needed to be kept to a minimum if the program was to succeed, the writer planned to train the faculty by academic departments which would permit maximum use of the scattered computers with which they would be working. The plan described by White (1995) using written do-it-yourself lessons would further minimize the handicaps of lack of time and sparcity of equipment. It would also permit the writer to extend one-on-one assistance to teachers who might initially be intimidated by the Internet environment. One teacher would be asked to work with a class on some research project on the Internet.

Pre-implementation would include gaining permission for the training program from the administration and putting in place an acceptable use policy for the school.

Report of Action Taken

The design of the project described here was, from its inception, aimed at delivering instruction in a particular technology in as simple and as painless a mode as possible. If teachers who had not yet achieved a significant comfort level with computers were going to embrace the possibilities of the computer-generated research process offered by the Internet, then care had to be taken

to make the instructions easy to grasp. Ease of learning and flexibility were the predominant qualities the training program must exhibit.

The school was connected to the Internet by way of the SouthEastern Regional Vision for Education as planned, but the school's local area network which would have permitted the connection to be rerouted to individual classrooms offering accessibility to larger numbers of teachers and students was put on hold when the system technology specialist resigned during the first half of the school year. A Macintosh computer and modem were subsequently set up in a room adjoining the media center for the duration of the project.

The introductory session of each academic department was held after school in the media center. Each introductory session acquainted a small group of teachers with general facts about the Internet and the printed resources concerning the Internet and its uses held by the media center. E-mail was explained, and each teacher submitted his or her password in order that e-mail accounts could be established with SERVE.

Each of the remaining four lessons were designed to cover Gopher and Veronica, Telnet, FTP and simple text download, and the World Wide Web. Gopher, the server, and Veronica, the search

engine, were introduced first because the home menu for the SERVE system was a Gopher menu. Each lesson was composed of one or more searches for stated information that might be of interest to that particular curricular area. Each step of the search was designated and showed the user how to move through the menus to find needed information (for samples of Activity Sheets see Appendix C). Moving through the menus demonstrated "surfing the 'net'" better than any explanation could have and gave the hands-on experience needed to overcome the teachers' fear of Internet research.

One teacher in each group was requested to work with the writer to introduce the Internet to selected students sometime during the five-week period. The nature of the student work was to be determined by the teacher's expertise and interest. By this method students would begin to use the Internet for research purposes. The limitations of the SERVE connection and the school's facilities made it impossible for an entire class to work with the Internet as originally planned, and the teachers volunteered small groups of their students for Internet projects instead.

Following the introductory session the teachers were allowed to choose their own time to return to the media center, connect with the Internet, and practice maneuvering through cyberspace using the aforementioned Activity Sheets. The original plan was to present

each teacher with one Activity Sheet per week for the five weeks allotted for each group. After the first two groups worked by this method, it became evident that the method was too structured and, therefore, some of the needed flexibility was lost. The remaining three groups were given all their Activity Sheets during the introductory session, and individual teachers were allowed to set up their work schedules in whatever way was convenient for them.

The original design called for individual teachers to work on their own to make prescribed searches on the Internet that would acquaint them with Internet travel. About halfway through the project, two teachers decided to work together on their searches, and it was learned that some teachers could work in pairs quite successfully. They could help each other, and their enjoyment of the experience seemed to be heightened. This alternative was chosen by several other teachers in later groups without any loss of flexibility.

The science department in the high school had made the greatest strides in the use of technology within its curriculum. Consequently, the writer chose this department as the place to initially introduce the Internet. The following instructions were given at the introductory session.

Week 1. Science teachers learned

a. to connect to the Internet,

b. to set up an e-mail account,

c. to choose a password,

c. to write a message,

d. to send a message,

e. to manage an account, and

f. to log off.

Week 2. Teachers used e-mail for the first time and used Gopher to retrieve information. They learned

a. to understand the home menu,

b. to visit a particular site,

c. to use Veronica to locate materials, and

d. to find their way back to the home menu.

Week 3. The Telnet instruction was a visit to a nearby college via the Internet where the teachers were able to use the college library's computer catalog. They were asked to locate a particular reference book, Electronic Style: A Guide to Citing Electronic Information (Li & Crane, 1993). It was believed that awareness of this reference work would give teachers a source to which they could turn when electronic citations were needed. Teachers were then asked to locate the same volume at a second nearby college using the state Union Catalog on the Internet. Telnet was a particularly useful exercise, and the same activity sheet was used for all groups.

Week 4. Teachers learned about File Transfer Protocol (FTP) and its benefits to educators. They visited FTP sites and learned what is available to them using this service. They experienced the simpler download process using the Capture to File command included in the ClarisWorks communication package on the Macintosh computer.

Week 5. Teachers learned to browse on the World Wide Web. They learned to

a. read HTML addresses,
b. locate materials of choice,
c. locate lesson plans,
d. search subject headings,
e. use Hyper Text Markup Language for making links, and
f. build an electronic resource list.

Week 6. Social studies teachers were guided through the introductory session. The media center paraprofessional joined this group so that in the future she would be prepared to help both students and teachers in Internet research as a regular media service. Group members set up e-mail accounts (SERVE allows its member schools to set up e-mail accounts for as many teachers as wish them and whenever they wish) and prepared to travel in the

four prescribed areas of the Internet by using printed instructions. The training for Week 6 followed closely the schedule for Week 1 except that the emphasis was on social studies.

Week 7. The lessons on Gopher and Veronica proceeded for social studies teachers with guidance from the writer whenever needed. It was clear by this time that very few teachers would be able to work on their own or would even wish to in the beginning. The do-it-yourself aspect was limited initially. However, valuable information could be pointed out by the instructor as the searches progressed that would be missed if teachers were left on their own, and toward the end of each group's training there were those who found they could work alone.

Week 8. Social studies teachers visited college libraries by way of Telnet. The ability to enter nearby colleges to locate needed materials that could be obtained through interlibrary loan or through personal visits was a bonus that teachers had not expected.

Week 9. The FTP lesson described in Week 4 was duplicated with members of the social studies department. The FTP download procedure proved to be too complicated for beginners, but they were able to learn what was available on the Internet for downloading later.

Week 10. The World Wide Web was introduced, and plans were made for working with social studies students to obtain information about colleges.

Weeks 11-15. The introductory session was held for five English teachers and included the establishment of e-mail accounts and plans for further study. The packet of four Activity Sheets was distributed to English teachers in the introductory session enabling them to follow a more flexible schedule in their Internet experience. It was easier for some teachers to work for longer periods of time and work their way through more than one Activity Sheet.

Activity 1. English teachers learned to use Gopher and Veronica with support and guidance from the writer.

Activity 2. Telnet instruction followed for English teachers who immediately requested a hard copy of Electronic Style (1993).

Activity 3. English teachers concentrated on FTP sites and used the Capture to File command to download simple text.

Activity 4. English teachers browsed the World Wide Web and searched for favorite sites. One English teacher was immediately ready with a project to involve some of her students in using the Internet. The students, assigned to create travelogues, learned why the Internet is such an important addition to small libraries. They

accessed large amounts of detailed information on obscure geographical sites that their library could never have supplied.

Weeks 16-20. Three foreign language teachers and one additional English teacher received the introduction to the Internet, submitted e-mail passwords, and prepared to work at their convenience in the weeks ahead.

Activity 1. Gopher and Veronica took language teachers to an International breakfast in Spain where the featured speaker was Secretary of Commerce Ron Brown.

Activity 2. Telnet explained entrance to nearby colleges and acquainted the language department with Electronic Style (1993).

Activity 3. FTP and download lessons were given.

Activity 4. The World Wide Web which would ordinarily be the most enjoyable of all the concentrations held only slightly more appeal for all the teachers than the other sessions due to the fact that the simple shell account provided by SERVE does not allow the user to operate in color or with graphics. Though embedded links could be used, without the color and graphics they did not add a great deal to the searches.

Weeks 21-25. Since mathematics classes seldom used the media center for research, they were left for last; however, several young teachers with prior computer experience were numbered

among the participating math teachers with the result that they were an enthusiastic group. More math teachers than the writer expected chose to take the Internet instruction.

Activity 1. Gopher and Veronica were useful but simple concepts to master. The math teachers had little trouble doing so, and found many mathematical puzzles on the Internet with which to dazzle unmotivated students.

Activity 2. The Telnet session for the math teachers proceeded smoothly at the convenience of the individual teachers.

Activity 3. The FTP lesson revealed several programs that math teachers planned to revisit.

Activity 4. The math teachers were surprised and delighted by the amount of mathematics resources that were available in all areas of the Internet, and the World Wide Web was no exception. The enthusiastic interest of the math teachers was a rewarding bonus of this project.

Week 26. Posttest surveys were conducted with teachers and the same classes that received them at the beginning of the project. Work conducted by students was compiled and analyzed.

Week 27. The log and checklists were examined for information that needed to be shared with the faculty.

Week 28. Information on the success of individual teachers was compiled and a written report was outlined.

Week 29. The report was written and printed for distribution to the faculty (see Appendix D).

Week 30. The log, the checklists, and feedback from participating teachers were examined to ascertain the most valuable resources on the Internet for this particular school.

Week 31. The writer designed a Web homepage for the high school which featured the students' and teachers' favorite research sites. It will serve as a personal menu for the school's further research (for a printed copy of the Web page, see Appendix E). The Web page was tested at the nearest technology training center maintained by the state for its educators.

Week 32. Permission to launch the homepage was granted from the administration, and the homepage was given to a provider.

The 32 weeks of the implementation of this project were not without occasional setbacks. At the beginning of the school year the school had been asked by the curriculum director to initiate a school renewal project which required every teacher to become a member of one of five school improvement committees. Each committee was required to meet every two weeks with the result that teachers had less time than ever before for additional projects. This new teacher

responsibility seriously cut into the number of teachers who could give their time to Internet instruction. Also, during the first group instruction the keyboard to the Macintosh that connected to the Internet was stolen, and the writer supplied her own personal keyboard until another could be purchased.

However, if the fates were unkind in the beginning, they repaid the project in full later. During the fourth month of the implementation of this practicum, a local man contacted the writer to report that he was about to establish an Internet terminal in the small town in which this project was conducted. He offered the school a direct connection for multiple computers through the use of an ISDN telephone line. The proposition was placed before the school technology committee which decided that the cost was feasible thanks to lottery funds, and the school should pursue the connection. Throughout the remainder of the implementation the possibility of a genuinely exciting connection added impetus to the project.

Chapter V

RESULTS, DISCUSSION, AND RECOMMENDATIONS

Results

This practicum explored the problem of providing adequate and current resources to a rural high school population through the school's media center--a media center beset by the familiar handicaps of rising prices and limited budgets. The goal was to make possible more viable research for both teachers and students within the school environment. The solution chosen was the introduction of the Internet into the school for the use of its research information and its educational materials and resources. The vehicle chosen was a single shell account provided by the SouthEastern Regional Vision for Education.

Two specific goals for this practicum were projected. First, the resources of the media center would be significantly increased. This goal was met. Internet resources available to any media center is an obvious improvement and gives access to an unimaginable amount of information. Even with the limitations of a shell account, the Internet considerably increased the possibilities for research in the school media center.

The second goal, instructing teachers and selected students to use the Internet was also met. Eighteen teachers and a paraprofessional completed an instruction program designed by the writer for the purpose of promoting the use of the Internet. Three other teachers completed partial instruction. Selected students were guided through Internet use in the areas of science research, college information, and travel and cultural information about geographical areas of the world.

The first objective, that a posttest survey of 60 students previously surveyed would reveal an increase of from 19 to 29 who would answer that they could find needed materials in the media center more than half the time, fell short. With 58 students responding only 24 reported research success more than half the time. Due to limitations of the Internet account only a few students had an opportunity to experience the Internet. The number was too small to make as significant a difference as was predicted. Table 4 compares the two surveys.

The second objective predicted that the number of teachers responding to a posttest survey who would report success more than half the time would increase from 17 to 25 also proved too optimistic. Twenty-one of 30 teachers responding reported success more than half the time. The project was conducted during the last

half of the school year. In the case of teachers, there was not enough time for their instruction to significantly affect their research in that school year. The limitations of the SERVE system also rendered Internet use less attractive than it would have been with full Internet access. Table 4 gives a comparison of the two surveys.

Table 4

Comparison of Successful Use of Media Center During Two School Years

Students' Successful Searches	1994-1995	1995-1996
never	2	1
seldom	11	15
half the time	25	18
usually	20	22
always	0	2
Teachers' Successful Searches	**1994-1995**	**1995-1996**
25% of the time	2	5
50% of the time	10	4
75% of the time	15	17
100% of the time	2	4

The third objective predicted the addition of three current encyclopedias to the media center resources because of Internet access. In reality three multimedia encyclopedias were added to the media center collection and Britannica Online which is accessed through the Internet became available to media center users. The

Oxford English Dictionary was also made available on the Internet and served to update the Webster's Third International Dictionary (1971). Both the encyclopedia and the dictionary were listed on the school homepage which gave all users immediate and easy access to them. These references along with numerous other reference works available under the listing "Ready References" exponentially increased the reference materials available to media center users.

Objective four predicted an enthusiastic response to electronic research by both teachers and students. Because the local area network was not totally operational the entire year, so few students were able to use the Internet connection that the attitudinal survey for students would have been meaningless. However, 20 of 24 teachers responding to the survey reported some enthusiasm for electronic research. Given teachers' well publicized reluctance to use technology, this was an encouraging result. Table 5 depicts the responses of a group of teachers to electronic research.

Objective five predicted the development of a report that would apprise the total faculty of the Internet as a new media center resource. An 18-page report describing the instructional program and giving an extensive list of Internet sites useful to educators (see Appendix D) was distributed to the entire faculty.

Table 5

Enthusiasm Scale for Electronic Research Among High School Teachers

Question to teachers: To what degree has online research affected your enthusiasm for research? (24 teachers responding)	
No change	4
Slightly enthusiastic	4
Moderately enthusiastic	8
Really enjoy research	6
Love it! Wow!	2

Objective 6 promised the launching of a web homepage for the school that would serve as a menu to connect to all the most useful areas of the Internet. The homepage is now on the Internet (see Appendix E for a print version of the homepage).

Discussion

The essential character of the project described here was one of working against a number of handicaps. It was conducted in a school located in a small, rural county in the South, and technology was just beginning to be provided in the system. Because of monetary constraints the technology which was provided was limited so that the least expensive Internet connection was the only one that could be employed. The SERVE-line was accessible only two hours

per day from one location in the school. Teachers are by nature slow to change their instructional patterns. A new school renewal project demanding large amounts of the teachers' time was initiated during the same time period as this practicum. And, finally, the practicum offered no other incentive to teachers than increased information and expertise in using technology. White (1995) who successfully used a similar method offered a pizza party as a reward. The writer usually offers staff development credit for teacher training, but the time required for the Internet instruction was not long enough to carry SDUs. All of these factors worked against a successful project.

However, there were factors that favored success. The state's emphasis on educational technology that resulted in a five-year technology plan for every school system had put the state's educators in a technology mode. Almost every teacher in the school had at least one computer in his or her classroom. Technology planning had, from the beginning been exercised at the teacher level, and most teachers felt some ownership of the school's technology program. Interest in all technology was high within the writer's school. Educational reform within the school system in recent years had been conspicuously successful, and teachers were more amenable to trying new methods and materials. Local teachers were

particularly receptive to short-term, in-school training. These factors enabled the completion of this project with a fair amount of success.

An addtional factor was important in gauging the project's final success. The Internet with all its advantages had been a reality in urban schools in the state for several years. A rural school faculty grows accustomed to doing without the advantages that affluent systems enjoy. Even a small attempt to bring one of the most comprehensive technological benefits of the Information Age to the local system was bound to whet the interest of those who would use it. There was evidence of a general appreciation for the effort even though it fell short of expectations in some respects. And it held the interest of the school population until they were presented with an opportunity to buy into a far more interesting and useful connection. The chances are good that without the limited connection covered by this project, there would have been far less interest in the direct connection that was offered to the school four months into the project. In other words, the project laid the foundation for a far greater enhancement to the school's resources than the project itself offered, and the introduction of this resource gave 18 teachers and a paraprofessional a head start toward making use of it.

Another direct result of the project is that the Staff Development Committee of the School Renewal Project asked

the writer to conduct a second session of Internet instruction, and this was scheduled for the opening days of the following school year. Again the first instruction had more far-reaching effects than were covered in the goals and objectives.

Besides Internet access still another benefit from the project was observed. It gave further strong evidence that the most successful technology training method for educators was the teachers training teachers method. For a second time local teachers responded positively to this in-school method of technology training. Even though there were many factors to discourage the local teachers from taking the time for the instruction, a good number still did so because it was made convenient for them, and they were not held to time constraints in learning. There was always someone to answer questions even weeks afterward. Teachers training teachers methodology features a built-in source of expertise that increases teachers' confidence in their ability to deal with technology.

Within this writer's home state teachers training teachers was not a widely used training method at this writing. Many educators were still dependent on either training centers or traveling trainers. Yet there are always people in almost every school who would be willing to receive large doses of training and pass it on on a regular

basis. The fact that this is the least expensive method of training further recommends it.

This writer believes that the importance of this project does not lie in numbers. When science students were able to find on the Internet information about an obscure scientific procedure that they most likely could not have found anywhere else, that is a significant result. One of the conditions cited above for the need for more resources was a lack of information about geographical areas, especially emerging nations. The ability to provide such rich amounts of information was a great improvement over former research conditions. A social studies teacher located a letter written by a citizen of Bosnia that illuminated that tragic story even more than television news coverage. English teachers found a treasure of literature-related materials located in Barr's English Class. And the enthusiasm of the young math teachers for Internet materials injected the project with the kind of excitement that educators anywhere could envy.

Neither is it possible to evaluate the importance of the connection as a whole in the time period covered by this project. It is a resource that will grow more valuable with time and experience.

In summary it can be said that despite a number of daunting handicaps the Internet was introduced to a significant number of

educators and a few students, that it did add innumerable resources to a limited media center, that the initial efforts led directly to an exciting resource the real value of which can only be guessed at, and that the school technology program, both resources and training, took a giant leap forward.

Recommendations

1. The inclusion of the Internet, even in the form of a simple shell account, into any high school media center would be a definite asset. The savings on expensive reference books alone would be worth the effort and whatever cost is incurred.

2. The teachers training teachers approach to technology training is recommended here as the most reasonable and cost effective technology training procedure currently available, and it is the training likely to hold the most appeal for teachers who might otherwise steer clear of technologies that can be beneficial to them and their students.

3. Internet instruction should be kept as simple as possible. An understanding of some of the ways to make use of it within a school setting and a few experiences moving among menus should be enough to get most teachers started.

4. Small group instruction, which was recommended by Siegel, (1995), is an effective procedure for teaching the Internet. Pressure on the learner is minimized, and small groups form a less stressful teaching situation for the instructor.

5. Connecting Internet research strategies to similar features of print research with which students and teachers are familiar (Page & Kesselman, 1994), such as comparing Veronica entries to card catalog subject headings, was, likewise, a useful training tactic.

6. If a faculty is not sufficiently interested in technology to submit to a training program, incentives work well. Staff development units are one of the most effective inducements, but others may work also.

Dissemination

The Board of Education of the writer's school contributed significant funds to the system's five-year technology plan. Therefore, it is absolutely necessary to furnish each member with a copy of this report. Copies will also be furnished to the Superintendent, Assistant Superintendents, System Technology Coordinator, and the Principals of the four schools in the system.

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APPENDICES

APPENDIX A
HOW DO YOU FEEL ABOUT RESEARCH ONLINE?: A SURVEY

HOW DO YOU FEEL ABOUT RESEARCH ONLINE?:
A Survey

If you have conducted research on an electronic encyclopedia, a multimedia encyclopedia, the electronic magazines and journals index (PROQUEST) or the Internet, please answer the following questions.

Are you a student or a teacher? Check in the space that applies.

_____ Student
_____ Teacher

What format or formats have you used? Check as many spaces as apply.

_____ Electronic encyclopedia (Grolier's)
_____ Multimedia encyclopedia (Grolier's, Compton's, Encarta)
_____ PROQUEST
_____ Internet

Please comment on the ease of use of those you have used. Check in appropriate space.

	Easy	Moderately Easy	About Average	Moderately Hard	Hard
Electronic encyclopedia	_____	_____	_____	_____	_____
Multimedia encyclopedia	_____	_____	_____	_____	_____
PROQUEST	_____	_____	_____	_____	_____
Internet	_____	_____	_____	_____	_____

Which of the online sources gave you the best information for your needs? Check the appropriate space.

_____ Electronic encyclopedia
_____ Multimedia encyclopedia
_____ PROQUEST
_____ Internet

To what degree has research online affected your enthusiasm for research? Circle one.

No change | Slightly Enthusiastic | Moderately Enthusiastic | Really enjoy Research | Love it! Wow!

Please use this space for any additional opinion you have concerning online research.

APPENDIX B
INTERNET SEARCH CHECKLIST

INTERNET SEARCH CHECKLIST

Search objective_____

Telnet_____
Gopher_____
Veronica_____
FTP_____
HTTP (WWW)_____

Menu_____

Submenu_____

Submenu_____

Submenu_____

Submenu_____

Disposition (save or not)

Bookmark (yes or no)

Comment:

APPENDIX C
SAMPLE ACTIVITY SHEETS

ENGLISH Activity Sheet 1

Gopher and Veronica

Remember that a Gopher is a server, and Veronica is a search engine that permits you to look for something by subject heading just as you would in any index.

I. Find a copy of William Butler Yeats' poem, "The Fiddler of Dooney." List the number of the poem.

Procedure:

Home Gopher Server
Search the Internet (by Veronica, Jughead, Archie, WAIS,WWW,...)
Search Gopher-space
Search Gopher Menus by Veronica
Veronica Queries. . .
Simplified Veronica: find ALL gopher types
Type "William Butler Yeats"
2 William Butler Yeats
The Fiddler of Dooney

II. Find an electronic periodical. Electronic periodicals can pop up in many menus. The following is one good source. Name the lead article.

Prodecure:

Home Gopher Server
Search the Internet (by Veronica, Jughead, Archie, WAIS, WWW,. . .)
Search World-Wide-Web hypertext documents
World-Wide-Web browser at UKans (Lynx)
Interlinks, Internet access made easy
Basic Internet Services
Gopher Servers
(NYSERNET) Educational Gopher
Special Collections: Empire Internet Schoolhouse (K-12)
Library and Internet Reference Tools
The Electronic Bookshelf (Penn State College)

Periodicals shelf (Check SUBJECT SHELF for More Journals)
Electronic Journals (Librarian Managed Collection)
Alphabetic Listing
E
EDUPAGE Current Issue

SCIENCE ACTIVITY SHEET 2

Telnet

With Telnet you may connect to another computer on the Internet and use that computer's services.

Possible login names: `guest anonymous public`
Common exit commands: control +], `quit, exit, bye`

I. Find the book Electronic Style in the Kennesaw College library and then find the same book at North Georgia College through the union catalog.

Procedure:

Home Gopher Server
8 Other Educational Resources on the Net
6 Institute for Global Communications
17 Internet Resources
10 Libraries
1 Library Catalogs Worldwide
4 Libraries
3 Americas
6 United States
9 Georgia
16 Kennesaw College <TEL>
Enter
At telnet> open KSCLIB.KENNESAW.EDU
login: library
password: library
terminal type: 20
enter
Start with Begin.
Choose Library Catalog
Select Title
Type in: `Electronic Style`
Copy down the call number
To end select E

Do you want to end this workstation session? N
Enter on BEGIN
Choose INFORMATION GATEWAY
Choose EXTERNAL DATABASES
Choose Union Catalog.
Type: Menu
Type: AU LI XIA
Type: CR NGA (North Georgia College Library)
How many copies?
Type: Quit
Type: E
Type: Y

You have used Telnet to do research in Kennesaw College Library and North Georgia College Library.

Possible Error Messages: Unknown host (you misspelled something)
Connection refused (busy, try again later)

LANGUAGE ACTIVITY SHEET 3

FTP and Downloading

FTP (file transfer protocol) permits a user to download both software and individual files.

I. Find a French board game.

Procedure:

Home Gopher Server
Search the Internet (by Veronica, Jughead, Archie, WAIS, WWW,. . .)
Search FTP sites--Internet file and archive servers
Popular FTP sites via Gopher
Software Archives at MERIT (Universityof Michigan)
Macintosh Archive (Merit Network, USA)
Game
Board
Etoile

II. Find and download an article entitled "23 Whitetails in the Valley".)

Procedure:

Home Gopher Server
SERVE's Products, Publications, Lesson Plans, and Archives
Lesson plans
Lesson plans from MVNWR
Secondary level lesson plans from MVNWR
23 whitetails in the valley

Download Instructions:

1. Go up to Sessions on the menu bar and pull down and select Capture to File.
2. You will be asked to name the file. Give it a name and select OK.
3. Scan through the article
4. Return to the menu bar, pull down, and select Stop Capture
5. The article is now on your computer.

Mathematics Activity Sheet 4

World Wide Web

The World Wide Web is currently the place to be on the Internet. You may search by subject heading, by URL (uniform resource locator), or browse the many homepages that are currently being maintained on the Web. Yahoo is the most popular index on the Web, and the Education heading will yield many riches for teachers.

I. Locate an article by James Braswell who composes the SAT math exams. Name the article.

Procedure:

Home Gopher Server
Search the Internet (by Veronica, Jughead, Archie, WAIS, WWW,. . .)
Search World-Wide-Web hypertext documents
World-Wide-Web browser at UKans (Lynx)
Interlinks, Internet access made easy
Basic Internet Service
World Wide Web
Searching the World Wide Web
Yahoo Guide
Education
Math and Science Education
Eisenhower National Clearinghouse
Online documents
Journal articles
Braswell, James S.

APPENDIX D
REPORT TO FACULTY

INTRODUCTION OF THE INTERNET TO PICKENS HIGH SCHOOL

At the beginning of the school year 1995-1996 a plan was drawn to introduce the Internet to the faculty of Pickens High School. The value of this service would lie in the large increase in the research materials in the media center and the educational resources immediately accessible to the staff and the students. The Internet resources would also make it possible for less money to be spent for reference materials and, therefore, would stretch the media budget. At that time the SouthEastern Regional Vision for Education (SERVE) was selected as the provider of the Internet services because it was the only provider that this system could afford. An account for the school was established on SERVE, and training began.

Training

The training of a portion of the faculty took place in a period of 25 weeks. In that time period members of each of the major academic departments of the school were given the opportunity to learn how to use the Internet. This initial training was to be followed by similar training early in the following school year for

any other faculty members who desired to use the Internet. One computer and a modem were set up in the Satellite Distance Learning Lab so that the one telephone line in that room could be shared.

The training consisted of an introduction, including some of the basic skills, to five major areas of Internet use: electronic mail; Gopher using the search engine, Veronica; Telnet; File Transfer Protocol and downloading; the World Wide Web.

Electronic mail permits a user to receive mail, send mail, and temporarily store information that can then be downloaded.

Gopher and Veronica make it possible to search for information by subject heading just as an individual might search in a card catalog or any other index.

Telnet enables the user to enter many libraries on the Internet and use their electronic resources. A user can locate materials that can then be requested through interlibrary loan or can travel to nearby college libraries to make use of needed materials.

File Transfer Protocol enables a user to download files and programs from the Internet to his or her own computer. The simpler method of downloading text using ClarisWorks was also included.

The World Wide Web is the site of rich electronic resources complete with color, graphics, and home pages. It also permits research through the use of subject headings and embedded links.

However, the SERVE-line is a single call-in provider and does not permit transmission in color or the transmission of graphics.

The method chosen for training consisted of an E-mail fact sheet and four worksheets that could be covered by the individual teachers at a time that was most convenient to them. They could work on their own or with the help of the media specialist. Only once was it necessary for all the interested teachers in each department to meet together. By using this simple, flexible procedure it is believed that training was as painless for busy teachers as possible and also relieved the system of providing release time for training at distant locations.

Results

After the Christmas holidays training began with the science department followed by social studies, English, languages, and mathematics. Eighteen teachers and an aide completed the entire training session, and three others completed a portion. Random students from four subject areas also gained experience in doing research on the Internet. The following is an account of some of the research done on the Internet that proved helpful to teachers and students.

E-mail

Electronic mail was the same for everyone, and most of the teachers trained had the experience of sending an E-mail message to someone on the Internet.

Telnet

Each of the trainees experienced Telnet through a visit to Kennesaw State University and from there by way of the Georgia Union Catalog to North Georgia College. The trainees were asked to locate Electronic Style: A Guide to Citing Electronic Information (Li & Crane, 1993) in both institutions. Concentration on this particular book was deliberate since it is the electronic style manual that is used as a reference in the American Psychological Association's Publication Manual (1994) and will be an important reference volume as scholars use more and more electronic research materials. Copies of both works have been ordered for our media center.

Downloading and FTP

Each trainee went through the process of downloading text using the Capture to File command under Sessions in ClarisWorks. File Transfer Protocol was explained, and sites offering file transfer archives were perused. However, no actual downloading of programs was attempted in this introduction.

Gopher using Veronica and World Wide Web

Both staff trainees and a few students working in each of the academic departments made use of a Gopher, a distant server, together with Veronica, a search engine, and the most popular network on the Internet, the World Wide Web. Students with an English writing assignment to create a travel brochure found that information could be found on exotic, faraway places difficult to locate in the school library, and that travel information was plentiful on any location. Locating data for science projects was made easier for some students who would have found nothing in the school library and would have found it difficult to locate information on their chosen topics anywhere else. Comprehensive career and college information was readily available to students who gave the Internet a try. The path to the White House was discovered, and users in the language department found rich cultural enhancements to their studies of languages.

As helpful as this Internet connection was in many ways, it also proved to be very limited. Our school was permitted only two hours of access each day, and during peak periods of use we were not able to use the Internet at all. We were able to receive only text in black and white which kept us from the most exciting parts of the Internet. And we had only one connection. It would have been

possible to route that connection to classrooms on the local area network had our local area network been up and running, but that would still have been one connection on one computer.

A New System

In April our school was presented with the possibility of acquiring an ISDN telephone line that permits multiple connections in multiple sites and includes the color and graphics of the World Wide Web. This connection is now in place. Every classroom that is presently connected to the school network will be able to access the Internet whenever the teacher chooses. With only a few simple directions those 19 people who are now trained can begin to use the Internet. Teachers who have not been trained may request similar training at your convenience.

You also need to be aware that the media center has subscribed to Britannica Online which permits you to use this up-to-date Britannica on the Internet using your classroom computer whenever you wish. The path to this online encyclopedia is listed below.

In the early weeks of school we will discuss security measures that must be observed in order that the Internet be used only for educational purposes and that safety for our students be assured. Our current connection comes with a filter, but precautions are still

necessary. A school acceptable use policy has been adopted, but we must now coordinate with a system-wide policy.

The stage is now set for school-wide use of this ultimate resource to supplement the school program. At present only the main building is networked and can use the Internet. Of course, when the new high school is completed everyone will be networked and will have immediate access to the Internet. In the meantime, the media center is available to all.

Internet access is a part of the school's five-year technology plan and as such is governed by the total staff of the school through the technology committee. Creative ideas and suggestions for the use of this service as well as any difficulties which may arise can always be directed to the technology committee. The committee will maintain close scrutiny of this service as it does with all technology services and will periodically conduct evaluations. It is particularly important that we all be aware of how the service is being used and what value it has to our teaching and learning experiences. The opinions and ideas of each user is of great value if we are to make the most of the Internet.

Important Sites Listed by Department

The following sites are taken from books, magazines, published

lists, and a log of the training program. The addresses given are URLs (Universal Resource Locators), links that will take you directly to the site. Those of you who were trained on SERVE-line will note that it is no longer necessary to move among large numbers of menus. A URL, a one-line address, eliminates the time-consuming menus of the SERVE-line. Those URLs which end with a diagonal are menus or indices to further sites; those without the diagonal are the text- and graphics-filled sites named.

To search by subject headings you may use "The Starting Point" which is listed among the favorite sites on the opening screen after you double click on your computer icon Internet Explorer. The opening screen is our high school homepage, and the favorites list includes those sites believed, at this time, to be the most valuable to research. This list and the page itself can be updated whenever we wish.

The Eudora Light icon on your computer screen is the E-mail system. It is explained under Help on the menu bar of Eudora Light.

Explore these sites at your leisure, and if you need further information, please ask.

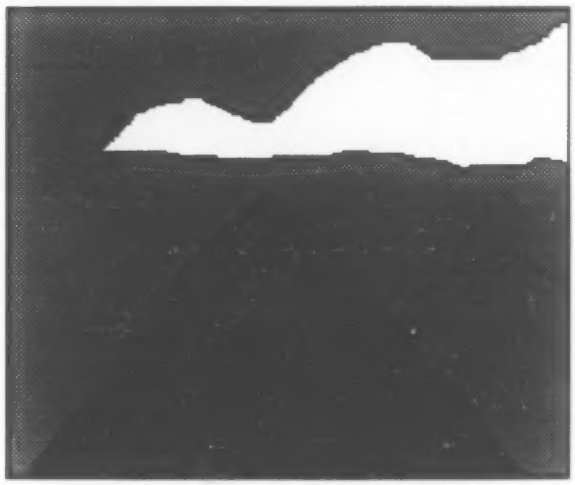
*Note: The report concluded with a 12-page list of Internet sites arranged by curricular areas.

APPENDIX E
SCHOOL WEB HOMEPAGE

Pickens High School

Jasper, Georgia

Planted in the Blue Ridge Mountains
High above the plain
-- *Alma Mater*



Great things happen when

men and mountains meet.

-- William Blake

Welcome to Pickens High School. We are the only high school in a small rural county in Georgia about sixty miles north of Atlanta. On a clear day from atop some of our mountains the skyline of Atlanta is visible. Once, the Appalachian Trail, stretching from Georgia to Maine, began on Oglethorpe Mountain in Pickens County; now it begins one county east. From our perch in the Appalachian foothills facing the hub of the South, we can claim the best of both rural and urban cultures.

Our high school is much like thousands of rural high schools in the nation, but while we are traditional, we are also progressive, humble and at the same time proud.

Characteristics which set us apart:

* An SAT score considerably higher than state average
* An educational partnership called Partners for Educational

Excellence which has significantly increased the number of graduates choosing post secondary education

* A video production course which sponsors a daily in-school television news program that is picked up by our local radio station WYYZ and broadcast to the county
* Graduates who have matriculated at institutions as far away as UCLA, Oberlin College, Georgetown University, Yale University, and the Air Force Academy
* A rapidly growing technology program which includes two-way interactive video

Our favorite sites:

Bartlett's Quotations
Britannica Online
Educational K12 Resources
Eisenhower National Clearinghouse
ESPN Sports Zone
Georgia Library System (Galileo)
Kennesaw Training Center
NASA
NCSA SuperQuest
Newspapers Online
Online Book Initiative
Oxford English Dictionary
Project Gutenberg
Ready Reference
Starting Point
University and College Education
Weather